ALTERNATIVE ENERGY EFFORTS AT GRC:

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Early Wind Turbine at GRC

Large wind turbine development has origins at GRC, where research began in the late 1970s. (from http://ecocitycleveland.org/ecologicaldesign/blue/ideabank/lake_wind_park.html)

NASA 4 MW machine (1982)
256'diam. Rotor, 262' tower

From Green Energy Ohio's presentation.

Current efforts

GRC is currently pursuing alternative energy as an option for their December 31, 2004, contract renewal with First Energy (FE).

Fletcher Miller, NASA employee and Vice President of the local nonprofit Green Energy Ohio, gave a presentation on alternative energy to the P2 Team on October 31, 2003. Fletcher explained current options for alternative power in the Northeast Ohio area. A local provider, can provide 98% natural gas and 2% biomass (cleaner than the coal power we currently use), but meeting GRC's load factor and "spurts" may be difficult. Another option is "green tags," which allow customers to purchase green attributes of power generated elsewhere, even in another state. Quyen Quach, P2 Energy person and one of GRC's coordinators of our energy contract, will be requesting that First Energy provide a percentage of wind (or any green power) without a cost increase. The most likely provider is a new Meyersdale, Pennsylvania wind farm owned by a subsidiary of First Energy. Green Energy Ohio's presentation

Details of current contract/situation

GRC currently has a contract with FE for electricity. This contract will expire on December 31, 2004. We are currently re-evaluating our electrical contract with the help of an energy consultant (hired by NASA HQs, Rich Wickman). The energy consultant is helping us to develop a strategy for the next electrical re-negotiation. Based on the current de-regulated electrical market and what we are paying for electricity with FE, he recommends that we extend the current contract (as is) with FE for a few more years. But, we had also asked the energy consultant to evaluate the current and projected availability and cost of purchasing "green power". At the time, FE did not have "green power" so the other option was to purchase "green tags," but this would add an additional 0.5 cent to 2 cents/kwh.

One big issue in evaluating the contract/supplier, is cost and reliability of energy. Not many suppliers meet these criteria. Due to the types of research we do here, we have a very poor load factor (around 0.26) and very high peak load (200 MW at times when wind tunnels are in operation), it's very hard to find other suppliers or other energy sources that can reliably accommodate our kind of load demand at GRC and still be competitive in terms of cost.

Solar power for GRC's facility is not cost effective due to high energy cost of solar power vs. what we are paying for electricity with FirstEnergy (average 5.4 cents/kwh).

In our current negotiations, Quyen will be requesting that First Energy provide wind (or any green power) without a cost increase. The most likely provider will be a Meyersdale, Pennsylvania wind farm owned by a subsidiary of FE. First Energy Solutions is subsidiary of First Energy, and will be buying all the output from this plant. It was scheduled to go on-line in December, 2003. Here is a link to the site: http://www.atlantic-renewable.com/under_construction.htm

Bowling Green wind farm

From Green Energy Ohio presentation.

How Do Green Tags Work (explanation from Maine Interfaith Power & Light)

When you buy Green Tags, you are paying to put more green electricity into an electrical grid in the United States, forcing polluting plants to cut back their output. Depending on the green tags provider, this might be considered a tax-deductible donation. Green Tags help create good jobs, protect our environment, improve our health, and promote energy generation within the U.S.:

1. Green electricity generators invest in and build a wind or solar facility, creating good jobs in a sustainable industry.
2. They sell their electricity at the market price and begin delivering electricity to the grid in their area.
3. They also sell a certificate for every 1,000 kilowatt hours they deliver. Green Tags are based on these certificates.
4. The revenue from selling electricity at market price plus revenue from the sale of Green Tags allows these green generators to stay in business, despite their higher operation costs.
5. Each kilowatt hour that a green generator delivers displaces a kilowatt hour from other generators, many of which burn fossil fuel.
6. By reducing the use of fossil fuel to generate electricity, Green Tags deliver cleaner air, a healthier environment and greater energy independence.

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THE PLAIN DEALER

Bowling Green breezing toward renewable energy

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John C. Kuehner
Plain Dealer Reporter

Bowling Green, Ohio - Two sleek wind turbines at the edge of this university town will soon begin generating enough pollution-free electricity to power 780 homes.

The $4.5 million project is the first commercial wind farm in Ohio.

"It's a significant event for us," said Daryl Stockburger, Bowling Green's director of utilities and the driving force behind the wind farm, which will start producing power within the next two weeks.

At about 390 feet, the turbines are the tallest structures in Wood County. They are visible for miles from where they stand just west of downtown. For comparison, the turbines are slightly shorter than the new Federal Courthouse Tower in Cleveland.

While about a dozen wind turbines dot the landscape around Ohio, the two in Bowling Green can generate 100 to 200 times more power. Even so, the turbines will provide the town with only about 3 percent of its power needs. At 1.8 megawatts apiece, they are among the largest wind turbines in the country. But that's tiny compared with the Perry nuclear power plant, which generates 1,320 megawatts.

"We look at this as a starting point," said Kent Carson, a spokesman for American Municipal Power-Ohio, which provided the financing for the construction. Bowling Green plans to pay it off over 15 years.

The project was spurred by volunteers, mostly from the Cleveland area, who wanted to see clean electricity generated in Ohio, said Fletcher Miller, vice president of Green Energy Ohio. The statewide group promotes renewable energy and conservation.

"It's been driven by the little people, not by FirstEnergy or American Electric Power," said Miller, a scientist at the NASA Glenn Research Center in Cleveland. He called it "fascinating" that the first big turbines in the state were built by a small city.

Members of Green Energy Ohio met Stockburger in 1998 at a conference, where they learned of Bowling Green's interest in renewable energy. In 2000, the city agreed to allow volunteers to

collect wind data at the site where the turbines now stand.

The yearlong research showed that about 30 feet above the tree line, the wind was powerful enough to be harnessed.

While Ohio is not among the top 20 states for wind power, the area around Bowling Green looks promising for more turbines, said John Dunlop, a Midwest representative for the American Wind Energy Association, a wind-energy trade association. The city's site can accommodate two more turbines.

Bowling Green has committed to take the power that the turbines produce.

Once the two turbines start producing electricity, Bowling Green will get 16 percent of its power from renewable sources, Stockburger said. The city also gets power from a dam and landfill gas.

"I know it's a university town, and we have a lot of people here who are concerned about the environment and support projects like this," Stockburger said. "But I don't think it's just the university towns that are concerned about the environment. Others would support projects like this."

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